



Panic disorder and pain in a national sample of persons living with HIV

Jennie C.I. Tsao^{a,*}, Aram Dobalian^b, Bruce D. Naliboff^c

^a*Pediatric Pain Program, Department of Pediatrics, David Geffen School of Medicine at UCLA, 10940 Wilshire Blvd, Suite 1450, Los Angeles, CA 90024, USA*

^b*Department of Health Services Administration, College of Public Health and Health Professions, University of Florida, and VA GLAHS, Los Angeles, CA, USA*

^c*Department of Psychiatry and Biobehavioral Sciences, Center for Neurovisceral Sciences and Women's Health (CNS/WH), UCLA, and VA GLAHS, Los Angeles, CA, USA*

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Abstract

Research to date has focused on depression and co-existing pain in HIV with relatively little attention devoted to the study of anxiety disorders and concurrent pain. We therefore examined the relationships among panic disorder, posttraumatic stress disorder (PTSD), major depression and pain in a US national sample of persons with HIV, controlling for key sociodemographic and clinical variables, including HIV disease status. The study sample comprised 1489 HIV + individuals (representing 219 667 persons). In multivariate analyses, panic disorder showed a strong association with pain ($\beta = -15.70$; 99% confidence interval [CI] = -21.33 to -10.08 ; $P < 0.001$), which was significantly greater than PTSD ($P = 0.002$) but only marginally greater than major depression ($P = 0.02$). Longitudinal analyses of the three psychological disorders revealed that increasing pain from baseline to follow-up (an approximately 6-month period) was associated with panic disorder only (relative risk ratio = 2.18, 99% CI = 1.02–4.69; $P < 0.01$), after controlling for baseline pain scores, baseline HIV disease status and change in disease stage across time. We discuss specific mechanisms by which clinical anxiety and chronic pain may be mutually maintained in HIV + individuals. Our findings suggest that panic disorder, as well as PTSD and major depression are associated with greater pain in HIV patients.

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1. Panic disorder and pain in a national sample of persons living with HIV

For persons with human immunodeficiency virus (HIV), the experience of pain has a significant negative impact on health-related quality of life (Lorenz et al., 2001). Recently, we found that 67% of the first nationally representative sample of adults with HIV reported experiencing pain during the prior 4 weeks (Dobalian et al., 2004). Thus, despite treatment advances, pain remains a considerable problem in HIV + individuals (Breitbart et al., 1996b; Frich and Borgbjerg, 2000; Hewitt et al., 1997; Vogl et al., 1999). HIV-related pain may derive from various sources, including the direct effects of HIV on the central or peripheral nervous system, immune suppression (e.g. opportunistic infections), treatments for

HIV (e.g. anti-retroviral medications), various disorders associated with HIV (Hewitt et al., 1997), as well as factors unrelated to HIV disease or its treatment (Del Borgo et al., 2001; Hewitt et al., 1997).

Pain in HIV has been linked with greater impairment in functioning, greater symptom distress (Breitbart et al., 1996a; Vogl et al., 1999), and increased psychological distress (Rosenfeld et al., 1996). Depression in particular, has often been associated with the presence and intensity of pain in HIV (Evans et al., 1998; Rosenfeld et al., 1996). Posttraumatic stress disorder (PTSD) has also been linked to greater pain intensity and pain-related interference in HIV + individuals (Smith et al., 2002). However, little attention has been paid to the potential impact of other anxiety disorders on pain in this population.

In HIV seronegative populations, panic disorder (PD) has demonstrated strong links to pain (Kuch et al., 1991; Schmidt and Telch, 1997). PD is characterized by frequent, recurrent panic attacks (i.e. discrete episodes of intense fear

* Corresponding author. Tel.: +1-310-824-7667; fax: +1-310-824-0012.
E-mail address: jtsao@ufl.edu (J.C.I. Tsao).

and physiological arousal), together with persistent concern about, and/or significant interference due to, the attacks. Panic attacks may include pain symptoms (e.g. chest pain); pain may also act as a trigger for such attacks. PD has been linked to increased pain prevalence—roughly 40% of such patients have reported persistent pain (Kuch et al., 1991). Similarly, 48% of generalized anxiety disorder patients reported a history of chest pain, although one-third of these also experienced panic attacks (Carter and Maddock, 1992).

Recent national estimates indicate that over 12% of patients with HIV meet criteria for PD (Vitiello et al., 2003), which is two to three times the general population rate. To the authors' knowledge, no prior work has focused specifically on the association between PD and co-occurring pain in HIV. We sought to investigate this relationship in a national sample of persons with HIV, taking into account key sociodemographic and clinical factors, as well as comorbid depression and PTSD. We hypothesized that presence of PD would be associated with more self-reported pain as well as increasing pain across time. Because PD often co-occurs with depression and PTSD (Brown et al., 2001; Tsao et al., 2002), and because these latter disorders have been shown to predict increased pain, we also explored the unique contribution of each disorder to the experience of pain in HIV.

2. Method

The HIV Cost and Services Utilization Study (HCSUS) derived data from interviews with a nationally representative probability sample of HIV-positive persons receiving care in the contiguous United States. The reference population was limited to persons at least 18 years old with known HIV infection who made at least one visit for regular or ongoing care to a non-military, non-prison medical provider other than an emergency department between January 5 and February 29, 1996. Full details of the design are available elsewhere (Frankel et al., 1999; Shapiro et al., 1999). The HCSUS employed a three stage sampling design in which geographic areas, medical providers, and patients were sampled (Lam and Liu, 1996). The HCSUS sampled 4042 eligible subjects, and 2864 (71%) completed the interviews. Institutional review boards reviewed all consent forms and informational materials. Baseline interviews began in January 1996 and ended in April 1997 (Berry et al., 1999). Follow-up interviews were conducted from December 1996 to July 1997 and were conducted with 2466 respondents (86.1% of baseline). The median time from baseline to follow-up was 225 days (99% confidence interval [CI] 206–244). A second follow-up was also conducted, but did not include the measures discussed in this paper.

Of the 2466 patients at first follow-up, 1405 were selected with certainty based on a positive screen for the targeted mental health disorders and/or illicit drug use and

156 were selected at random from the remaining 1061 patients who screened negative. Of these 1561 patients, 1489 (95.4%) completed the supplemental mental health survey from which we derive the data used in this study. Of the 72 non-respondents, 10 (6.4% of the 156) were from the random group and 62 (5.8% of the 1061) were from the certainty group. As these non-response rates suggest, attrition among the random and certainty groups was similar. The number of individuals chosen for the random group was designed to provide a representative mix of patients who had screened negative (Vitiello et al., 2003). All interviews were conducted using computer-assisted personal interviewing instruments.

2.1. Independent variables

Respondents were diagnosed as meeting DSM-IV criteria for major depression (MDD), PTSD, and PD within the 6 months prior to the first follow-up interview using the long form of the World Health Organization's Composite International Diagnostic Interview (World Health Organization, 1997). Respondents were also assessed for generalized anxiety disorder and dysthymia but because less than 4% of patients met criteria for each of these disorders (Vitiello et al., 2003), they were not included in these analyses. As detailed above and elsewhere (Vitiello et al., 2003), respondents in the present study represented a subset of the full HCSUS sample who completed the first follow-up.

Measures of clinical health status included HIV-disease stage (asymptomatic, symptomatic without AIDS, symptomatic with AIDS), and wasting syndrome (weight loss of 10% or more and fever, diarrhea or loss of appetite in last 6 months) (yes/no). We included a measure that assessed whether the respondent's clinical status worsened between baseline and first follow-up (yes/no). That is, respondents whose disease stage changed for the worse (e.g. changed from asymptomatic to symptomatic without AIDS) were coded as experiencing worsened clinical status. We also included early access (i.e. by December 1996) to highly active anti-retroviral therapy (HAART) (yes/no). Access to HAART has been found to reduce HIV severity, leading to improved physical health status (Dobalian et al., 2003). Demographic characteristics at baseline included in the analyses were gender, age, race/ethnicity, education, and income. Mode of HIV exposure was categorized as heterosexual, intravenous drug use (IVDU), men who have sex with other men (MSM), and 'other' (related to hemophilia, a contaminated blood transfusion, or no identified source).

2.2. Dependent variables

The dependent variable for the analyses was pain as assessed by the pain scale of the Short-Form 36 (SF-36), a widely used and psychometrically sound instrument (Hays

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